



# TBS-1QES42506CE

TBS

TEMPERATURE SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

| Type            | Part no. |
|-----------------|----------|
| TBS-1QES42506CE | 6065330  |

Other models and accessories → [www.sick.com/TBS](http://www.sick.com/TBS)

## Detailed technical data

### Features

|                                              |                                                                                                          |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Measuring range</b>                       | -20 °C ... +120 °C                                                                                       |
| <b>Sensor element</b>                        | Pt1000, 2-wire, class A according to IEC 60751                                                           |
| <b>Output signals</b>                        | IO-Link/PNP + PNP + 4 mA ... 20 mA                                                                       |
| <b>Switching output</b>                      | Transistor                                                                                               |
| <b>Switching voltage</b>                     | Supply voltage [V DC] - 1 V DC                                                                           |
| <b>Maximum switching current</b>             | ≤ 250 mA                                                                                                 |
| <b>Switching delay</b>                       | 0 s ... 50 s, programmable                                                                               |
| <b>Setting accuracy of switching outputs</b> | +0.1 °C                                                                                                  |
| <b>Switching output</b>                      | Transistor                                                                                               |
| Number                                       | 3                                                                                                        |
| Switching voltage                            | Supply voltage [V DC] - 1 V DC                                                                           |
| Maximum switching current                    | ≤ 250 mA                                                                                                 |
| Switching delay                              | 0 s ... 50 s, programmable                                                                               |
| Setting accuracy of switching outputs        | +0.1 °C                                                                                                  |
| <b>Scaling of measuring range</b>            | Zero point: max. +25 % of span<br>Full scale: max. -25 % of span                                         |
| <b>Scaling of measuring range</b>            | Max. +25 % of span, max. -25 % of span                                                                   |
| <b>Display</b>                               | 14-segment LED, blue, 4-digits, height 9 mm,<br>Display electronically turnable by 180 °, update: 200 ms |
| <b>Rotatable housing</b>                     | Display against housing with electrical connection: 330 °<br>Housing against process connection: 320 °   |

### Mechanics/electronics

|                                           |                                                   |
|-------------------------------------------|---------------------------------------------------|
| <b>Process connection</b>                 | Compression fitting G ¼ A according to DIN 3852-A |
| <b>Insertion length/diameter of probe</b> | 250 mm / 6 mm                                     |
| <b>Seal</b>                               | Copper                                            |
| <b>Wetted parts</b>                       | Stainless steel 1.4571 (AISI 316Ti)               |

<sup>1)</sup> At room temperature and when connected through thread.

<sup>2)</sup> The enclosure rating classes specified only apply while the thermometer is connected with female connectors that provide the corresponding enclosure rating.

|                                         |                                                                                                                      |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Maximum process pressure</b>         | ≤ 150 bar <sup>1)</sup>                                                                                              |
| <b>Housing material</b>                 | Lower body: stainless steel 1.4301 (AISI 304)<br>Plastic head: PC + ABS<br>Input keypad: TPE-E<br>Display window: PC |
| <b>Enclosure rating</b>                 | IP65 (according to IEC 60529) <sup>2)</sup><br>IP67 (according to IEC 60529) <sup>2)</sup>                           |
| <b>Electrical connection</b>            | Round connector M12 x 1, 5-pin                                                                                       |
| <b>Maximum ohmic load R<sub>A</sub></b> | ≤ 100 kΩ (Switching outputs)<br>< 0.5 kΩ (output signal 4 mA ... 20 mA)                                              |
| <b>Supply voltage</b>                   | 15 V DC ... 35 V DC                                                                                                  |
| <b>Maximum current consumption</b>      | 45 mA                                                                                                                |
| <b>Total current consumption</b>        | 570 mA (incl. switching current)<br>320 mA                                                                           |
| <b>Protection class</b>                 | III                                                                                                                  |
| <b>Isolation voltage</b>                | 500 V DC                                                                                                             |
| <b>Overvoltage protection</b>           | 40 V DC                                                                                                              |
| <b>Short-circuit protection</b>         | Outputs Q <sub>A</sub> , Q <sub>1</sub> , Q <sub>2</sub> towards M                                                   |
| <b>Reverse polarity protection</b>      | L <sup>+</sup> towards M                                                                                             |
| <b>Electrical safety</b>                |                                                                                                                      |
| Protection class                        | III                                                                                                                  |
| Isolation voltage                       | 500 V DC                                                                                                             |
| Overvoltage protection                  | 40 V DC                                                                                                              |
| Short-circuit protection                | Outputs Q <sub>A</sub> , Q <sub>1</sub> , Q <sub>2</sub> towards M                                                   |
| <b>Reverse polarity protection</b>      | L <sup>+</sup> towards M                                                                                             |
| <b>CE-conformity</b>                    | 2004/108/EC, EN 61326-1 emission (group 1, class B) and interference immunity (industrial application)               |
| <b>RoHS certificate</b>                 | ✓                                                                                                                    |

<sup>1)</sup> At room temperature and when connected through thread.

<sup>2)</sup> The enclosure rating classes specified only apply while the thermometer is connected with female connectors that provide the corresponding enclosure rating.

## Performance

|                                     |                                         |
|-------------------------------------|-----------------------------------------|
| <b>Accuracy of sensor element</b>   | ≤ ± (0.15 °C + 0.002  t ) <sup>1)</sup> |
| <b>Accuracy of switching output</b> | ≤ ± 0.8 % of span                       |
| <b>Display accuracy</b>             | ≤ ± 0.8 % of span ± 1 digit             |
| <b>Accuracy of analog output</b>    | ≤ ± 0.5 % of span                       |
| <b>Response time t<sub>50</sub></b> | ≤ 5 s <sup>2)</sup>                     |
| <b>Response time t<sub>90</sub></b> | ≤ 10 s <sup>2)</sup>                    |

<sup>1)</sup> |t| is the absolute value of the temperature in °C.

<sup>2)</sup> Depending on sensor configuration, according to IEC 60751.

## Ambient data

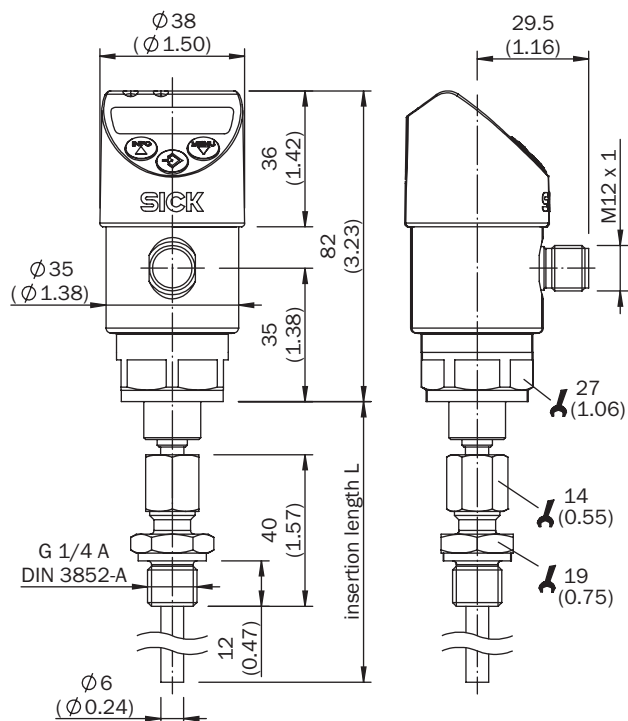
|                                          |                   |
|------------------------------------------|-------------------|
| <b>Ambient temperature</b>               | -20 °C ... +80 °C |
| <b>Storage and transport temperature</b> | -20 °C ... +80 °C |
| <b>Relative humidity</b>                 | 45 % ... 75 %     |

## Classifications

|                       |          |
|-----------------------|----------|
| <b>ECl@ss 5.0</b>     | 27200208 |
| <b>ECl@ss 5.1.4</b>   | 27200208 |
| <b>ECl@ss 6.0</b>     | 27200208 |
| <b>ECl@ss 6.2</b>     | 27200208 |
| <b>ECl@ss 7.0</b>     | 27200208 |
| <b>ECl@ss 8.0</b>     | 27200208 |
| <b>ECl@ss 8.1</b>     | 27200208 |
| <b>ECl@ss 9.0</b>     | 27200208 |
| <b>ECl@ss 10.0</b>    | 27200208 |
| <b>ECl@ss 11.0</b>    | 27200208 |
| <b>ETIM 5.0</b>       | EC002994 |
| <b>ETIM 6.0</b>       | EC002994 |
| <b>ETIM 7.0</b>       | EC002994 |
| <b>UNSPSC 16.0901</b> | 41112211 |

## Dimensional drawing (Dimensions in mm (inch))

Compression fitting G 1/4 A



## Connection type



- ① L+
- ② Q<sub>2</sub>
- ③ M
- ④ Q<sub>1</sub>
- ⑤ Q<sub>A</sub>

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)